What can I do? How can I help?

There are several ways to become involved in this grass roots effort. Find out from local officials about citizens water quality monitoring programs and volunteer! If there isn't a program, start one! Three years worth of background water quality data is needed to improve your estuary. Get involved in citizens groups forming to discuss and act upon this problem. Express concern to local officials and support them when they propose allocating funds to pursue estuarine water quality improvements through land use management. Participate in public meetings associated with this effort and express a willingness to help. **You can make a difference by supporting this project!** Call the numbers listed on the back of this brochure for more information.

Contacts

For more information about this project, contact **Brian Dudley** (DEP) 508/946-2753, email brian.dudley@state.ma.us, **Brian Howes** (SMAST) 508/326-0912, email bhowes@capecod.net, **Ed Eichner** or **Tom Cambareri** (Cape Cod Commission) 508/362-3828, email eeichner@capecodcommission.org or tcambareri@capecodcommission.org. Read more at the following Web site: www.mass.gov/dep/smerp/smerp.htm.

The Commonwealth of Massachusetts

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Executive Office of Environmental Affairs

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Department of Environmental Protection

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The Massachusetts Estuaries Project

Restoring the Embayments of Southeastern Massachusetts

A collaborative effort between the Massachusetts Department of Environmental Protection (DEP) and the UMASS School of Marine Science and Technology (SMAST).

What are Estuaries?

Estuaries are special bodies of water occurring when the sea extends inland and meets the mouth of a river or streams. The estuaries of Southeastern Massachusetts —the harbors and bays of Cape Cod, Buzzards Bay and the Islands— are ecosystems that provide home and habitat for shellfish and sea grasses and breeding grounds for important commercial offshore marine fisheries. Rapid population growth over several decades has created an abundance of nutrients that have leached into the estuaries through ground and surface waters. Nutrients, such as phosphorus and nitrogen, act as a fertilizer to aquatic plants. The result —changes in water quality and the buildup of invasive weed and algal growth causing fish kills, closed beaches, destroyed productive shellfish areas and creating aesthetically displeasing waters that adversely affect the valuable tourist industry and coastal property values.

Why is this happening to our estuaries?

Nitrogen from septic systems, wastewater treatment plants, lawns and storm water leaches into groundwater and flows underground and is discharged to surface water bodies. Unlike other contaminants that are slowed down as they pass through soil particles, nitrogen goes directly into the groundwater to be transported to streams and rivers that flow into coastal estuaries. The tidal flushing that occurs when the tides change is not sufficient to remove the nutrients from the estuaries. Stagnant nutrients prompt the accelerated growth of nuisance plants, weeds and algae, using up all of the oxygen in the water. This forces out finfish, shellfish, and indigenous plant species. The result — a water body that is visually displeasing, smells bad, and cannot support the natural uses that the estuaries have historically offered.

How can we fix this problem?

The Massachusetts Estuaries Project effort will begin to fix this problem by determining all of the factors specific to each estuary that are causing the problem. Project partners will determine the geographic area contributing nutrients to a specific estuary, determine what the nutrient sources are, what the nutrient load is, and how great a nutrient load the estuaries can tolerate without dramatically changing their character and usages. In most cases, returning the estuaries to the water quality condition that support sensitive shellfish habitats and lush eel grass beds, it will be necessary to remove a significant percentage of the nutrient loadings coming from an estuary's watershed. Nutrient removal may come primarily in the form wastewater treatment and secondarily through stormwater management programs including of limited use of lawn fertilizers. In some scenarios, changing the water flow within an estuary to increase flushing may compliment nutrient reduction and removal efforts.

What will this project do?

This project will provide water quality, nutrient loading, and hydrodynamic information for 89 estuaries in Southeastern Massachusetts. This information will be combined through the use of a linked watershed/estuary model that will predict the water quality changes that will result from land use management decisions. Over the next six years a report for each of the 89 estuaries will evaluate several water quality conditions and how that relates to the health of the estuary and the land use changes necessary to bring about that improvement. This project is a collaborative effort by two state agencies, the Executive Office of Environmental Affairs (EOEA) (through the Department of Environmental Protection (DEP)) and the University of Massachusetts's School of Marine Science and Technology (SMAST) and is subsidized by funding that allows communities to undertake this evaluation at approximately 40 percent of the actual cost.